NORTH CAROLINA DIVISION OF AIR QUALITY

Air Permit Review

Permit Issue Date: XX/XX/XXXX

Region:	Winston-Salem Regional Office
County:	Watauga
NC Facility ID:	9500134
Inspector's Name:	Read Plott
Date of Last Inspection:	12/01/2015 (P. Williams)
Compliance Code:	3 / Compliance - Inspection

Facility Data

Facility's Name:	Maymead Materials, Inc. - 421 Recycling Yard
Facility Address:	5251 US Highway 421 South Boone, NC 28607
SIC:	2951 / Paving Mixtures And Blocks
NAICS:	324121 / Asphalt Paving Mixture and Block Manufacturing
Facility Classification:	**Before:** Small **After:** Synthetic Minor
Fee Classification:	**Before:** Small **After:** Synthetic Minor

Permit Applicability

SIP:	Yes
NSPS:	Yes (Subpart I)
NESHAP:	No
PSD:	No
PSD Avoidance:	Yes (SO_2)
NC Toxics:	Yes (2D .1100 & 2Q .0711)
112(r):	No
Other:	Recycled Fuel Oil Requirements

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Wiley Roark President (423) 727-2000 PO Box 911 Mountain City, TN 37683	Wiley Roark President (423) 727-2000 PO Box 911 Mountain City, TN 37683	Wiley Roark President (423) 727-2000 PO Box 911 Mountain City, TN 37683

Application Data

Application Number:	9500134.15B
Date Received:	06/12/2015
Application Type:	Modification
Application Schedule:	State

Existing Permit Data

Existing Permit Number:	10003/R04
Existing Permit Issue Date:	05/15/2015
Existing Permit Expiration Date:	02/28/2022

Review Engineer: Taylor Hartsfield
Review Engineer's Signature:
Date:

Comments / Recommendations:

Issue:	10003/R05
Permit Issue Date:	XX/XX/XXXX
Permit Expiration Date:	02/28/2022

1. PURPOSE OF APPLICATION

On June 12, 2015, the DAQ-WSRO received an application from Maymead Materials, Inc. requesting a modification of Air Quality Permit 10003/R04. The application contained most of the applicable forms, the $400 fee for modification of a Synthetic Minor facility, and a zoning consistency determination (ZCD) from the Watauga County Planning and Inspections Department. The ZCD indicated that there are no applicable zoning and subdivision ordinances for this facility, and that the project must comply with the Watauga County High Impact Land Use Ordinance. For areas without zoning, the facility must comply with the requirements of 15A NCAC 2Q .0113, including publishing a legal notice in a newspaper, submitting an affidavit and proof of publication that the legal notice was published, and posting a sign on the property where the new or expanded source will be located. The facility published a legal notice in The Watauga Democrat on April 19 and 26, 2015, and the affidavit of publication, signed April 27, 2015, was submitted with the application. On June 12, 2015, this permit writer emailed Sean Mackey, Project/Env. Manager for Maymead Materials, Inc., regarding the posted sign. A photo of the sign was provided that same day, and it was discovered that a height adjustment of 1.5" would need to be made to comply with the sign height requirement of the rule. It was confirmed via email on June 30, 2015, that the height adjustment had been made. The application was considered complete for processing as of that date.

The facility is seeking to add a drum mix, hot mix asphalt (HMA) plant with a 325 tons per hour maximum rated capacity, capable of processing recycled asphalt pavement (RAP). The major components of this HMA plant include a No. 2/ recycled No. 2/ No. 4/ recycled No. 4 fuel oil-fired drum dryer/mixer controlled by a bagfilter, a HMA storage silo with truck loadout operation, a No. 2 fuel oil-fired liquid asphalt cement heater, and fuel oil and liquid asphalt cement storage tanks. The No. 2 fuel oil-fired liquid asphalt cement heater cannot qualify for exemption per 2Q .0102 (c)(2)(B)(i)(I) because the unit is subject to 2D .1100, including modeling for toxic air pollutants. Therefore, it is not allowed to be exempt as referenced by 2Q .0102 (b)(7). The application also mentioned a 25 ton per hour RAP crusher. After communication via email July 27 through August 5, 2015 (Attachment F), between this permit writer and Mr. Mackey, it was clarified that this unit is a Gator model "lump breaker" used to separate clusters of RAP that have already been crushed. In a DAQ Permit Workgroup meeting on May 23, 2013, it was decided that these Gator units would not be listed as permitted or insignificant/exempt sources because no emission factors for these units exist, and any fugitive

emissions would be minimal. Furthermore, as these units do not technically meet the definition of a crusher, they are also not considered an NSPS 40 CFR Part 60, Subpart OOO affected source.

The facility has requested a production limit of 300,000 tons of asphalt per year and a fuel oil sulfur content limit of 1.5%. As the facility intends to be primarily engaged in the production of asphalt, the SIC and NAICS codes have been changed to 2951 and 324121, respectively. With this modification, it is expected that the classification of the facility will change from Small to Synthetic Minor. In addition, the modification is expected to trigger a toxics review to comply with 2D .1100 and 2Q .0711. As such, the facility submitted Form D3 with the original application to request that the DAQ-Air Quality Analysis Branch perform modeling of toxic air pollutants. Further discussion of classification change and toxics modeling is contained in this review.

2. CHRONOLOGY

Date	Event	Comments
06/12/2015	Application received	Application incomplete for processing; Need to comply with 2Q .0113 zoning; Clock off
06/22/2015	Acknowledgement letter sent	
06/30/2015	Zoning verification received	Application complete for processing; Clock on
07/01/2015	Acknowledgement letter sent	
07/07/2015	Additional information request by modeler	Need coordinates of asphalt heater; Clock off
07/08/2015	Additional information request by permit writer	Need to correct/add forms for permit review
08/05/2015	Additional information received for permit writer	
11/10/2015	Additional information received for modeling	Clock on
11/18/2015	Modeling memo issued	Some minor corrections needed
01/06/2016	Revised modeling memo issued	
XX/XX/XXXX	Permit issued	

3. DESCRIPTION OF BUSINESS

Maymead Materials, Inc. - 421 Recycling Yard is currently a non-metallic mineral processing plant utilizing wet suppression. The facility currently crushes and recycles construction debris, including concrete and RAP (recycled asphalt pavement). With this modification, the facility will primarily become a hot mix asphalt production plant with the non-metallic mineral processing plant becoming a secondary operation. According to the report for the last compliance inspection performed by Paul Williams, DAQ-WSRO Environmental Specialist, on December 1, 2015, the facility operates 20-30 days per year and has not operated since November 10, 2015. The facility's emissions sources are summarized in Table 1. The facility's exempt emissions sources are summarized in Table 2. Equipment to be added is in bold text.

Table 1 – Permitted Equipment

Emission Source ID	Emission Source Description	Control System ID	Control System Description
One drum mix, hot mix asphalt plant (325 tons per hour maximum rated capacity) capable of processing recycled asphalt pavement, including:			
ES-15 (NSPS)	**No. 2 fuel oil/ recycled No. 2 fuel oil/No. 4 fuel oil/ recycled No. 4 fuel oil-fired drum dryer/mixer (120 million Btu per hour maximum heat input)**	**CD-1**	**Bagfilter (7,163 square feet of filter area)**
ES-16	**Hot mix asphalt storage silo (70 tons capacity)**	**N/A**	**N/A**
ES-17	**Truck loadout operation**	**N/A**	**N/A**
ES-19	**No. 2 fuel oil-fired liquid asphalt cement heater (1 million Btu per hour maximum heat input)**	**N/A**	**N/A**

Emission Source ID	Emission Source Description	Control System ID	Control System Description
One non-metallic mineral processing plant utilizing wet suppression, including:			
Rock crushing operation, consisting of:			
ES-14	Track-mounted mobile jaw crusher (150 tons per hour rated capacity) with one integral conveyor	N/A	N/A
ES-01c	Track-mounted cone crushing unit consisting of a 3' diameter cone crusher (100 tons per hour rated capacity) and two integral conveyors	N/A	N/A
ES-03	Screen (5' x 12')	N/A	N/A
ES-04	Conveyor (36" wide)	N/A	N/A
ES-05	Conveyor (36" wide)	N/A	N/A
ES-06	Conveyor (36" wide)	N/A	N/A
ES-07	Conveyor (36" wide)	N/A	N/A
ES-09	Conveyor (36" wide)	N/A	N/A
ES-10	Conveyor (36" wide)	N/A	N/A
Recycling operation, consisting of:			
ES-01b	Portable impactor/crusher (100 tons per hour rated capacity)	N/A	N/A
ES-11	Conveyor (48" wide)	N/A	N/A
ES-12	Track-mounted screening unit consisting of a reject grid, an 18' x 5' screening deck (100 tons per hour rated capacity), and four integral conveyors	N/A	N/A
ES-13	Conveyor (36" wide)	N/A	N/A

Table 2 – Insignificant / Exempt Activities

Source ID	Source Description	Exemption Regulation	Source of TAPs?	Source of Title V Pollutants?
IES-15	Portable diesel-fired internal combustion engine (425 hp maximum rated capacity) associated with impactor/crusher (ES-01b)	2Q .0102 (c)(1)(L)(ii)	Yes	No (Title II only)
IES-1	**Above ground storage tank containing fuel oil (5,000 gallons capacity)**	**2Q .0102 (c)(1)(D)(i)**	**Yes**	**Yes**
IES-2	**Above ground storage tank containing liquid asphalt cement (30,000 gallons capacity)**	**2Q .0102 (c)(1)(L)(xii)**	**Yes**	**Yes**

4. CONTROL DEVICE EVALUATION

The HMA drum dryer/mixer (ES-15) will have particulate matter emissions from the aggregate dust controlled by a new bagfilter (CD-1). The following table summarizes the information provided for the control device on Form C1 submitted with the application. The bagfilter will have one compartment containing 576 bags, each 4.75" in diameter and 120" in length. The applicant filtering velocity of 5.9 ft/min will not exceed the typical filtering velocity of 10.0 ft/min for abrasive dust. Temperature exceedance will not be an issue for the bagfilter as it is expected to operate between 212-375°F, and the filter media can withstand 400°F. The application claims that the bagfilter will have a 99.9% control efficiency. The DAQ Bagfilter Evaluation Spreadsheet (Attachment A) predicts a 99.96% control efficiency. Therefore, this permit writer agrees that the control device is appropriately designed and that the efficiency is reasonable.

Table 3 – Control Device Evaluation

Control Device ID	CD-1
Material Controlled	Abrasive Dust
Type	Bagfilter
Surface Area, ft^2	7,163
Inlet Air Flow Rate, acfm	42,000
Control Efficiency, %	99.96
Applicant Filtering Velocity, ft/min	5.9
Typical Filtering Velocity, ft/min	10.0
Method of Cleaning	Pulse Jet
Fabric	Polyamide (Nylon)
Maximum Outlet Temperature, °F	212-375°F
Maximum Rated Filter Temperature, °F	400°F

5. REVIEW OF REGULATIONS

Maymead Materials, Inc.-421 Recycling Yard is subject to the following Title 15A North Carolina Administrative Code regulations.

2D .0202 – Registration of Air Pollution Sources

This regulation applies, and it will be included on the permit. This regulation gives authority to the DAQ to require a facility to report, as in this case, total weights and kinds of air pollution released as well as any other information considered essential in evaluating the potential of the source to cause air pollution. As this is a modification application, the expiration date, February 28, 2022, will not change. The next emissions inventory will be due for CY2020. The DAQ anticipates continued compliance with this regulation from the facility.

2D .0503 – Particulates from Fuel Burning Indirect Heat Exchangers

This regulation applies, and it will be added to the permit. The No. 2 fuel oil-fired liquid asphalt cement heater (ES-19) is not allowed to have emissions of particulate matter from the combustion of fuel exceeding 0.6 lbs/MMBtu, because it has a heat input less than 10 MMBtu/hr. The drum dryer/mixer (ES-15) is not subject as it is direct-fired. The following calculation shows that particulate matter emissions are equal to 0.024 lbs/MMBtu when combusting No. 2 fuel oil (AP-42, Tables 1.3-1 and 1.3-2). The DAQ anticipates future compliance with this regulation from the facility.

Total Particulate Matter (PM) = Filterable Particulate Matter (FPM) + Condensable Particulate Matter (CPM)

No. 2 Fuel Oil
PM = [(2.0 lbs FPM /10^3 gal) + (1.3 lbs CPM /10^3 gal)] × (10^3 gal /140 MMBtu) = 0.024 lbs/MMBtu < 0.6 lbs/MMBtu

2D .0506 – Particulates from Fuel Hot Mix Asphalt Plants

This regulation applies, and it will be added to the permit. This regulation applies to all hot mix asphalt plants. The plant must limit particulate matter emissions resulting from operation according to the allowable rate. The allowable rate is a function of the process weight rate and is calculated by the following equations, where *P* is the process rate in tons per hour, and *E* is the allowable emission rate of PM in pounds per hour.

$E = 4.9445 * (P)^{0.4376}$ for $P < 300$ tons per hour
$E = 60$ lbs/hr for $P \geq 300$ tons per hour

As the process weight rate for the new HMA plant is to be 325 tons per hour, the allowable emission rate is 60 pounds per hour. Per AP-42 Table 11.1-3, the emission factor for PM from a drum mix HMA plant controlled by a fabric filter is 0.033 lbs PM/ton of asphalt. Therefore, the actual expected PM emission rate will be equal to 10.73 lbs/hr based on the calculation below.

Drum Mixer/Dryer with Fabric Filter
PM = 0.033 lbs PM/ton of asphalt × 325 tons of asphalt/hr = 10.73 lbs PM/hr < 60 lbs PM/hr

Visible emissions from stacks or vents at a HMA plant shall be less than 20% opacity when averaged over a six minute period. Fugitive dust shall be controlled as required by 2D .0540 referenced below. A source test on the drum dryer/mixer (ES-15) controlled by a bagfilter (CD-1) will need to be conducted to determine the HMA plant's particulate matter emission rate. See 2D .0605 below for more details regarding testing. Per the Memorandum "Hot Mix Asphalt Plant Performance Testing/Emission Testing Frequency" issued August 13, 2013, by the Director of the DAQ, the facility must test for compliance at least once every ten years. If the emission sources operate according to manufacturer specifications and with any applicable control devices, the sources should be in compliance with this rule. The DAQ anticipates future compliance with this regulation from the facility.

2D .0510 – Particulates from Sand, Gravel, or Crushed Stone Operations

This regulation applies, and it will be included on the permit. The facility, engaging in sand, gravel, recycled asphalt pavement (RAP), or crushed stone operations, must not cause, allow, or permit any material to be produced, handled, transported, or stockpiled without taking measures to reduce to a minimum any particulate matter from becoming airborne. This is in order to prevent exceeding the ambient air quality standards beyond the property line for particulate matter. Fugitive dust shall be controlled as required by 2D .0540 referenced below. Process generated emissions from crushers, conveyors, screens, and transfer points shall be controlled so that opacity standards required by 2D .0521 and 2D. 0524, as applicable, are not exceeded. Specifically, crushers are to be controlled using wet suppression. According to the last inspection report, the facility was in compliance with this rule. The DAQ anticipates continued compliance with this regulation from the facility.

2D .0516 – Sulfur Dioxide Emissions from Combustion Sources

This regulation applies, and it will be added to the permit. This regulation applies to all combustion sources that discharge sulfur dioxide. In this facility's case, it applies to the No. 2 fuel oil/recycled No. 2 fuel oil/No. 4 fuel oil/recycled No. 4 fuel oil-fired drum dryer/mixer (ES-15), the No. 2 fuel oil-fired liquid asphalt cement heater (ES-19), and the exempt portable diesel-fired internal combustion engine (IES-15). The sulfur dioxide emissions should not exceed 2.3 lbs/MMBtu input, each.

For the drum dryer/mixer (ES-15), the sulfur dioxide emission rate is equal to 0.03 lbs/MMBtu when combusting No. 2 fuel oil and 0.16 lbs/MMBtu when combusting No. 4 fuel oil (AP-42, Table 11.1-7). An assumption is made that No. 4 fuel oil has the same emission factors as waste oil.

No. 2 Fuel Oil SO_2 = 0.011 lbs of SO_2/ton of asphalt × 325 ton/hr ÷ 120 MMBtu/hr = 0.03 lbs/MMBtu < 2.3 lbs/MMBtu
No. 4 Fuel Oil SO_2 = 0.058 lbs of SO_2/ton of asphalt × 325 ton/hr ÷ 120 MMBtu/hr = 0.16 lbs/MMBtu < 2.3 lbs/MMBtu

For the asphalt storage tank heater (ES-19), the sulfur dioxide emission rate is equal to 0.507 lbs/MMBtu when combusting No. 2 fuel oil as demonstrated below (AP-42, Table 1.3-1). The equation assumes that No. 2 fuel oil contains 0.5% by weight sulfur. The DAQ anticipates future compliance with this regulation from the facility.

No. 2 Fuel Oil
$SO_2 = 142(S)$ lbs/10^3 gal × 10^3 gal/140 MMBtu = 142(0.5) lbs/10^3 gal × 10^3 gal/140 MMBtu = 0.507 lbs/MMBtu < 2.3 lbs/MMBtu

For the exempt portable diesel-fired internal combustion engine (IES-15), the sulfur dioxide emission rate is equal to 0.29 lbs/MMBtu (< 2.3 lbs/MMBtu) when combusting diesel fuel in an engine rated less than 600 hp output (AP-42, Table 3.3-1).

2D .0521 – Control of Visible Emissions

This regulation applies, and it will be included on the permit. According to section (d), visible emissions from the emission sources manufactured after July 1, 1971, shall not be more than 20% opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87% opacity may occur not more than once in any hour nor more than four times in any 24-hour period. For sources manufactured before July 1, 1971, a 40% opacity limit applies. However, sources subject to a visible

emission standard in 2D .0506 or 2D .0524 shall meet that standard instead of the standard contained in this rule. All the facility's existing sources are subject to the 20% opacity limit based on previous permit reviews. The new equipment's manufacture dates were not provided with the application, but it is likely that the sources will be manufactured after July 1, 1971, and therefore subject to the 20% opacity limit. According to the last inspection report, the facility was not operating, so compliance could not be verified. If the subject emission sources operate according to manufacturer specifications and with any applicable control devices, they will likely comply with the opacity limit. The DAQ anticipates continued compliance with this regulation from the facility.

2D .0524 – New Source Performance Standards

This regulation applies, and it will be added to the permit. The facility is required to comply with New Source Performance Standards (NSPS) that were promulgated in 40 CFR Part 60 by the EPA. The facility is subject to Subpart I for "Hot Mix Asphalt Facilities" due to the addition of the No. 2 fuel oil/recycled No. 2 fuel oil/No. 4 fuel oil/recycled No. 4 fuel oil-fired drum dryer/mixer (ES-15). The facility shall not discharge into the atmosphere from the affected source any gases which contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf) or exhibit 20% opacity or greater. A source test on the rotary drum mix asphalt plant controlled by a bagfilter (CD-1) will need to be conducted to determine the HMA plant's particulate matter and visible emissions. See 2D .0605 below for more details regarding testing. As discussed under 2D .0506 above, the facility has to retest for compliance every ten years. The DAQ anticipates future compliance with this regulation from the facility.

The facility's existing sources associated with the non-metallic mineral processing plant are not subject to NSPS 40 CFR Part 60, Subpart OOO for "Nonmetallic Mineral Processing Plants" because all crushers (ES-01b, ES-01c, and ES-14) are within the 150 tons per hour or less exemption threshold.

2D .0535 – Excess Emissions Reporting and Malfunctions

This regulation applies, and it will be included on the permit. This regulation is applicable to all permitted equipment. According to section (f), if there are excess emissions from a source lasting more than four hours resulting from a malfunction, a breakdown of process or control equipment, or any other abnormal conditions, the facility should notify the DAQ. According to the last inspection report, the facility indicated that no such instances have occurred. The DAQ anticipates continued compliance with this regulation from the facility.

2D .0540 – Particulates from Fugitive Dust Emission Sources

This regulation applies, and it will be included on the permit. Any particulate matter emissions that do not pass through a process stack or vent and that are generated within plant property boundaries are called fugitive dust emissions and are subject to this regulation. If fugitive dust emissions cause excessive visible emissions beyond the property boundary or contribute to substantive complaints, the DAQ may require the owner or operator of the facility to develop, implement, and comply with a fugitive dust control plan. According to the last inspection report, the facility utilizes a water tank on a trailer if necessary. The DAQ anticipates continued compliance with this regulation from the facility.

2D .0605 – General Recordkeeping and Reporting Requirements

This regulation applies, and it will be added to the permit. This regulation allows the DAQ to require any monitoring, recordkeeping, reporting, or testing it deems necessary for the facility to demonstrate compliance with an emission standard or permit condition. As mentioned previously, a memorandum titled "Hot Mix Asphalt Plant Performance Testing/Emission Testing Frequency" was issued August 13, 2013, by the Director of the DAQ. This requires all hot mix asphalt plants to test for compliance with 2D .0506 and 2D .0524 (NSPS Subpart I) at least once every 10 years. The stack testing is for filterable and condensable particulate matter using EPA Methods 5 and 202, respectively. Additionally, EPA Method 9 is required for visible emissions. The test must be performed at or within 90% of the maximum production rate of 325 tons per hour. The test must be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of the facility. The results of the test for this facility must be submitted to the DAQ-WSRO 60 days after the testing. In accordance with 2D .2602, a testing protocol must be provided to DAQ prior to testing. Protocols are not required to be approved before the test date, but those that are received at least 45 days prior to the test date will be reviewed. The facility must provide at least 15 days notice in written form of any required performance testing, to provide DAQ the opportunity to have an observer present. The DAQ anticipates future compliance with this regulation from the facility.

2D .0611 – Monitoring Emissions from Other Sources

This regulation applies, and it will be added to the permit. This rule applies to the new bagfilter (CD-1) to be located at the facility. According to the regulation, the control device should control particulate matter emissions from the drum dryer/mixer (ES-15) as specified on the permitted equipment list. Routine maintenance and periodic inspections of the control device should be performed as recommended by the manufacturer. At minimum, an annual internal inspection must occur for this control device. Records of all inspections and maintenance with dates and descriptions should be kept in a log book (written or electronic format) located on-site. This log book should be made available to DAQ personnel upon request. Additionally, within 15 days after start-up of the HMA plant, the facility is required to notify the DAQ of the start-up date in writing. The DAQ anticipates future compliance with this regulation from the facility.

2D .1100 – Control of Toxic Air Pollutants

This regulation applies, and it will be added to the permit. A toxics review has been triggered due to the addition of the HMA plant and associated sources that emit toxic air pollutants (TAPs). The facility modeled for arsenic unlisted compounds (ASC-other), benzene (71-43-2), formaldehyde (50-00-0), and nickel metal (7440-02-0) due to expected actual emissions of these TAPs being above their respective toxic permit emission rates (TPERs) at 2Q .0711. The sources of these TAP emissions are the drum dryer/mixer (ES-15), the HMA storage silo (ES-16), the truck loadout operation (ES-17), and the liquid asphalt cement heater (ES-19). The heater cannot be exempt from toxics per 2Q .0702 (a)(18), because it is a combustion source permitted after July 10, 2010. The existing portable diesel-fired internal combustion engine (IES-15) can be exempt from toxics, because it is a combustion source permitted before July 10, 2010. TAPs are also expected to be emitted from the exempt storage tanks containing fuel oil (IES-1) and liquid asphalt cement (IES-2), but these sources currently qualify for exemption from toxics rules per 2Q .0702(a)(19)(B).

According to the air dispersion modeling analysis memorandum written by Nancy Jones, DAQ-RCO-AQAB Meteorologist II, dated January 6, 2016:

> *"[…] The modeling adequately demonstrates compliance, on a source-by-source basis, for all toxics modeled.*
>
> *[…] The plant is sized to produce 325 tons/hour of asphalt. Total annual arsenic and benzene emissions were based on 300,000 tons of asphalt production per year. The modeled hourly arsenic and benzene emissions rates were then obtained by dividing the total annual emissions by 8,760 hours per year.*
>
> *AERSCREEN, using the EPA default meteorological settings, was used to evaluate impacts in both complex and elevated terrain. Direction specific building dimensions, were used within AERSCREEN to model for building wake effects. Receptors extended away from the property to a distance of 1.5 km."*

The following table illustrates the maximum impacts from the modeling.

Table 4 – Modeled TAP Emissions

Emission(s) Source	TAP (CAS #)	Emissions Rates	Averaging Period	Maximum Concentration [ug/m^3]	AAL [ug/m^3]	AAL [%]
No. 2 fuel oil/ recycled No. 2 fuel oil/No. 4 fuel oil/ recycled No. 4 fuel oil-fired drum dryer/mixer (ES-15)	Arsenic unlisted compounds (ASC-other)	0.168 lbs/yr	Annual	0.00021	0.0021	10
	Benzene (71-43-2)	117 lbs/yr		0.021	0.12	18
	Formaldehyde (50-00-0)	1.01 lbs/hr	1-hr	19	150	13
	Nickel metal (7440-02-0)	0.492 lbs/24-hrs	24-hrs	0.11	6	2
Hot mix asphalt storage silo (ES-16)	Benzene (71-43-2)	1.17 lbs/yr	Annual	See above – the above values are presented as facility-wide.		
	Formaldehyde (50-00-0)	0.0273 lbs/hr	1-hr			
Truck loadout operation (ES-17)	Benzene (71-43-2)	0.649 lbs/hr	Annual			
	Formaldehyde (50-00-0)	0.00119 lbs/hr	1-hr			

Emission(s) Source	TAP (CAS #)	Emissions Rates	Averaging Period	Maximum Concentration [ug/m^3]	AAL [ug/m^3]	AAL [%]
No. 2 fuel oil-fired liquid asphalt cement heater (ES-19)	Arsenic unlisted compounds (ASC-other)	0.035 lbs/yr	Annual	See above – the above values are presented as facility-wide.		
	Benzene (71-43-2)	0.172 lbs/yr				
	Formaldehyde (50-00-0)	0.00034 lbs/hr	1-hr			
	Nickel metal (7440-02-0)	0.000072 lbs/24-hrs	24-hrs			

To ensure compliance, the facility will be limited to produce no more than 300,000 tons of asphalt per year. In addition, the heights and geodetic positions of the stacks and release points, as specified during the modeling and now contained in this permit condition, shall remain unchanged. The facility is required to record the tons of asphalt produced monthly in a logbook, which must be kept on-site and made available to DAQ personnel upon request. All records must be kept on-site for a minimum of three years. The facility is required to report by January 30 of each year the total amount of asphalt produced in the previous calendar year. No recordkeeping or reporting requirements are required for the asphalt cement heater because this source was modeled at its maximum capacity. The DAQ anticipates future compliance with this regulation from the facility.

2D .1806 – Control and Prohibition of Odorous Emissions

This regulation applies, and it will be included on the permit. The facility is responsible for preventing objectionable odorous emissions from traveling beyond the facility's boundaries. The facility is not specifically exempt from this regulation according to section (d). According to the last inspection report, there were not any objectionable odors encountered at the property boundary, and no odor complaints have been received. The DAQ anticipates continued compliance with this regulation from the facility.

2Q .0102 – Activities Exempted from Permit Requirements

This regulation applies, and it will be included on the permit. The facility is adding a 5,000 gallon aboveground fuel oil storage tank (IES-1) and a 30,000 gallon aboveground liquid asphalt cement storage tank (IES-2). IES-1 is exempt from permitting per 2Q .0102 (c)(1)(D)(i) for "storage tanks used solely to store fuel oils, kerosene, diesel, crude oil, used motor oil, lubricants, cooling oils, natural gas or liquefied petroleum gas." IES-2 is exempt from permitting per 2Q .0102(c)(1)(L)(xii) for "sources for which there are no applicable requirements." The tanks will be added to the Insignificant/Exempt Activities attachment to the permit.

The facility's diesel-fired internal combustion engine (IES-15; 425 hp maximum rated capacity) associated with impactor/crusher (ES-01b) is considered a portable non-road engine. Therefore, it is exempt per 2Q. 0102(c)(1)(L)(ii) for "non-self-propelled non-road engines, except generators, regulated by rules adopted under Title II of the Federal Clean Air Act" and is exempt from federal stationary source standards (NSPS and NESHAP). A condition is included in the permit under this rule for the purpose of reminding the facility to maintain records that document each time the location of a portable engine is changed and the reason for the relocation. If the portable engine were to remain at the same location for more than 12 consecutive months, that engine shall be considered a stationary engine and shall no longer be exempt from NESHAP 40 CFR Part 63, Subpart ZZZZ. The facility shall notify the DAQ within 10 days should any portable engine become a stationary engine. The DAQ anticipates continued compliance with this regulation from the facility.

2Q .0304 – Applications (Zoning Specific Condition)

This regulation applies, and it will be added to the permit. This rule requires the facility to comply with all lawfully adopted local ordinances that apply to the facility at the time of construction or operation of the facility under this permit. The local zoning authority shall have the responsibility of enforcing all lawfully adopted local zoning or subdivision ordinances. This condition is being added due to the fact that the facility's HMA plant does not currently comply with local ordinances. The DAQ anticipates future compliance with this regulation from the facility.

2Q .0309 – Termination, Modification and Revocation of Permits

This regulation applies, and it will be included on the permit. In accordance with North Carolina General Statute 143-215.108(c) and this rule, the Director of the DAQ has the authority to modify and reissue the permit with additional emission controls and/or any additional operational restrictions necessary to demonstrate compliance with any applicable regulation. The permit can also be terminated or revoked. Upon becoming aware of any credible air emissions data not previously considered, the DAQ may require the facility to submit additional information such as emission estimates or air dispersion modeling. This rule is listed in permits for concrete batch plants, asphalt plants, and quarries and for facilities with a history of noncompliance. The DAQ anticipates continued compliance with this regulation from the facility.

2Q .0315 – Synthetic Minor Facilities

This regulation applies, and it will be added to the permit. The facility has requested a limit of 100 tons per year for sulfur dioxide (SO_2) and carbon monoxide (CO) emissions in the permit to avoid becoming a Title V facility. Therefore, the facility will be reclassified as Synthetic Minor. The facility has requested a production limit of 300,000 tons of asphalt per consecutive 12-month period. Additionally, the sulfur content of the No. 4 and recycled No. 4 fuel oil shall be limited to no more than 1.5% sulfur by weight. The sulfur content of the No. 2 and recycled No. 2 fuel oil does not require a limit as it is assumed equal to or less than 0.5% sulfur by weight. Fuel supplier certifications must be kept on-site to verify sulfur content of combusted fuel oil. The facility is required to record and report by January 30 of each year the amount of asphalt produced and the facility-wide sulfur dioxide and carbon monoxide emissions. The data should include monthly and 12 month totals. The DAQ anticipates future compliance with this regulation from the facility.

2Q .0317 – Avoidance Conditions (2D .0530 PSD – Sulfur Dioxide)

This regulation applies, and it will be added to the permit. The HMA plant has the potential to emit more than 250 tons per year of sulfur dioxide emissions after controls. This facility is not on the list of 28 source categories with 100 tons per year major source thresholds. The facility has requested that a limit be placed in the permit so that they may avoid the applicability of 2D .0530 "Prevention of Significant Deterioration." A limit of 250 tons per year of sulfur dioxide emissions has been set, and the facility is considered minor for PSD purposes There should be no issue with the facility meeting this limit as sulfur dioxide is limited further to 100 tons per year due to the requirements for Synthetic Minor facilities (See 2Q .0315 above). The DAQ anticipates future compliance with this regulation from the facility.

2Q .0317 – Avoidance Conditions (2Q .0700 – Recycled Fuel Oil)

This regulation applies, and it will be added to the permit. The facility is subject to this rule for the avoidance of 2D .0530 "Prevention of Significant Deterioration" as previously mentioned above. The facility is also subject to this rule for the avoidance of 2Q .0700 "Toxic Air Pollutant Procedures" due to the use of recycled Nos. 2 and 4 fuel oil. The recycled fuel oil must be equivalent to the virgin counterpart. This can be met by following the allowable levels for arsenic, cadmium, chromium, lead, total halogens, flash point, sulfur, and ash as listed in the permit condition. The facility must record and maintain for a minimum of three years the actual amount of recycled fuel oil delivered to and combusted on an annual basis. Each load received shall include a delivery manifest, a batch specific analytical report, batch signature information, and a certification indicating there was no detectable PCBs. Within 30 days of each calendar year, the facility must report the total gallons of recycled fuel oil from each vendor combusted and a summary of the results of the analytical testing on the combusted fuel oil. The DAQ anticipates future compliance with this regulation from the facility.

2Q .0711 – Emission Rates Requiring a Permit

This regulation applies, and it will be added to the permit. The facility must be operated and maintained so that any toxic air pollutant (TAP) emitted does not exceed its respective toxic permit emission rate (TPER). Prior to exceeding any TPER, the facility must modify their air quality permit. The triggered TAP emissions at the facility must be tracked and recorded to demonstrate compliance. A toxics review has been triggered due to the addition of the HMA plant and associated sources. The drum dryer/mixer (ES-15) and asphalt cement heater (ES-19) will be sources of the following TAPs contained in the table below. The expected actual emission rates of these TAPs were taken from the NCDEQ Asphalt and Fuel Oil Combustion spreadsheets corrected and completed by this permit writer. These rates will not exceed the TPERs as demonstrated below. It is reasonable to assume that the facility will maintain records of all triggered TAP emissions. The DAQ anticipates future compliance with this regulation from the facility.

Table 5 – Toxic Air Pollutant Emissions

Toxic Air Pollutant (CAS #)	TPER	Expected Actual Emission Rate
Acetaldehyde (75-07-0)	6.8 lbs/hr	0.423 lbs/hr
Acrolein (107-02-8)	0.02 lbs/hr	0.00845 lbs/hr
Benzo(a)pyrene (Component of 83329/POMTV & 56553/7PAH) (50-32-8)	2.2 lbs/yr	0.00529 lbs/yr
Beryllium Metal (unreacted) (Component of BEC) (7440-41-7)	0.28 lbs/yr	0.0263 lbs/yr
CFC-11 (Trichlorofluoromethane) (75-69-4)	140 lbs/hr	1.76×10^{-5} lbs/hr
Cadmium Metal, elemental, unreacted (Component of CDC) (7440-43-9)	0.37 lbs/yr	0.149 lbs/yr
Carbon disulfide (75-15-0)	3.9 lbs/day	0.00872 lbs/day
Chromium (VI) Soluble Chromate Compounds (Component of CRC) (SolCR6)	0.013 lbs/day	0.00165 lbs/day
Fluorides (sum of all fluoride compounds as mass of F ion) (16984-48-8)	0.34 lbs/day; 0.064 lbs/hr	0.00639 lbs/day; 0.000266 lbs/hr
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (57653-85-7)	0.0051 lbs/yr	3.90×10^{-7} lbs/yr
Hydrogen chloride (hydrochloric acid) (7647-01-0)	0.18 lbs/hr	0.0683 lbs/hr
Hydrogen sulfide (7783-06-4)	1.7 lbs/day	0.192 lbs/day
MEK (methyl ethyl ketone, 2-butanone) (78-93-3)	78 lbs/day; 22.4 lbs/hr	0.0938 lbs/day; 0.00871 lbs/hr
Manganese & compounds (MNC)	0.63 lbs/day	0.0271 lbs/day
Mercury, vapor (Component of HGC) (7439-97-6)	0.013 lbs/day	0.00917 lbs/day
Methyl chloroform (71-55-6)	250 lbs/day; 64 lbs/hr	0.168 lbs/day; 0.144 lbs/hr
Methylene chloride (75-09-2)	1,600 lbs/yr; 0.39 lbs/hr	0.00987 lbs/yr; 1.07×10^{-5} lbs/hr
Perchloroethylene (tetrachloroethylene) (127-18-4)	13,000 lbs/yr	0.0961 lbs/yr
Phenol (108-95-2)	0.24 lbs/hr	0.00131 lbs/hr
Styrene (100-42-5)	2.7 lbs/hr	0.000313 lbs/hr
TCE (trichloroethylene) (79-01-6)	4,000 lbs/yr	0.00 lbs/yr
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (Component of CLDC & 83329/POMTV) (1746-01-6)	0.0002 lbs/yr	6.30×10^{-8} lbs/yr
Toluene (108-88-3)	98 lbs/day; 14.4 lbs/hr	10.2 lbs/day; 0.949 lbs/hr
Xylene (mixed isomers) (1330-20-7)	57 lbs/day; 16.4 lbs/hr	0.845 lbs/day; 0.0785 lbs/hr

6. NEW SOURCE PERFORMANCE STANDARDS (NSPS) / NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) / PREVENTION OF SIGNIFICANT DETERIORATION (PSD) / 112(r) / ATTAINMENT/NON-ATTAINMENT STATUS

NSPS APPLICABILITY – The facility is subject to a NSPS regulation promulgated in 40 CFR Part 60. The facility is subject to 40 CFR Part 60, Subpart I for "Hot Mix Asphalt Facilities." See 2D .0524 under Section 4 above for more details.

The No. 2 fuel oil-fired liquid asphalt cement heater (ES-19) is not subject to 40 CFR Part 60, Subpart Dc as the maximum heat input is less than 10 million Btu per hour. The insignificant aboveground storage tanks containing fuel oil and liquid asphalt cement (IES-1 and IES-2) are not subject to 40 CFR Part 60, Subpart Kb, because IES-1 is less than 75 m^3 (~19,813 gallons) and liquid asphalt cement has a vapor pressure less than 0.12 kilopascals (0.017 pounds per square inch) at 325 ºF (AP-42 11.1 HMA plants, background document, 2/2004, p. 4-82).

It should be noted that the portable impactor/crusher (ES-01b) with associated portable diesel-fired internal combustion engine (IES-15) are not subject to NSPS 40 CFR Part 60, Subpart OOO for "Nonmetallic Mineral Processing Plants" as the rated capacity (100 tons per hour) is within the 150 tons per hour or less exemption threshold. In addition, the self-propelled units ES-01c and ES-14 are rated as 150 tons per hour or less, and therefore, exempt.

Refer to the review for Air Quality Permit 10003/R03 for a full federal regulatory review.

NESHAP APPLICABILITY – The facility is not subject to any NESHAP regulations promulgated in 40 CFR Parts 61 or 63. Refer to the review for Air Quality Permit 10003/R03 for a full federal regulatory review.

PSD APPLICABILITY – The facility does have the potential to emit greater than 250 tons per year of criteria pollutant sulfur dioxide after controls. However, the facility has opted to limit their sulfur dioxide emissions per 2Q .0317 (see above) and is therefore considered minor for PSD purposes. This facility is not on the list of 28 source categories with 100 tons per year major source thresholds. Watauga County has not yet triggered a PSD baseline date. Therefore, increment tracking is not required.

112(r) APPLICABILITY – The facility is not subject to the Risk Management Program requirements under 112(r) because it does not have any subject chemical assets. However, the facility is still subject to the General Duty clause.

ATTAINMENT/NON-ATTAINMENT STATUS – Watauga County is currently in attainment or unclassifiable for all pollutants.

7. FACILITY-WIDE EMISSIONS

The following table summarizes the facility-wide emissions. The actual emissions are from the CY2012 emissions inventory that was submitted with the last permit renewal. The expected actual and potential emissions (before and after controls/limits) were calculated by adding emissions from the NCDEQ Asphalt, Fuel Oil Combustion, and Stone Crushing/Quarry spreadsheets (Attachments B through E) as applicable. The Stone Crushing/Quarry spreadsheet was run twice to calculate potential emissions before and after controls/limits. Potential emissions before controls/limits are based on using wet suppression only on the crushers (due to 2D .0510 requirement), and not on screens and conveyors. Potential emissions after controls/limits are based on using wet suppression on all applicable sources. Emissions from the portable diesel-fired internal combustion engine (IES-15) are not included in the actual or potential emission estimates, because it is considered a mobile source subject to Title II of the Clean Air Act. Therefore, its emissions are not considered for Title V applicability.

Table 6 – Facility-Wide Emissions

Pollutant	CY2012 Actual Emissions [tons/year]	Expected Actual Emissions [tons/year]	Potential Emissions [tons/year]	
			Before controls/limits	After controls/limits
PM	0.01	5.58	126.93	10.70
PM_{10}	0.00	3.85	58.66	5.76
$PM_{2.5}$	-	0.03	18.60	0.32
SO_2	-	76.40	687.28	76.40
NOx	-	9.51	79.55	9.51
CO	-	20.20	188.97	20.20
VOC	-	7.24	68.49	7.24
HAP_{Total}	-	1.54	14.63	1.54
$HAP_{Highest}$ (Formaldehyde)	-	0.48	4.54	0.48

8. COMPLIANCE

The last compliance inspection was performed by Paul Williams, DAQ-WSRO Environmental Specialist, on December 1, 2015. According to the inspection report, the facility appears to be in compliance with all applicable air quality rules. Regarding the facility's compliance history for the last five years, the facility was issued a Notice of Violation and Notice of Recommendation for Enforcement (NOV/NRE) on April 26, 2010, for constructing and operating a track mounted cone crusher and screen and four conveyors without modifying the permit, as discovered during the April 21, 2010 compliance inspection. The facility was issued a subsequent NOV/NRE on May 11, 2010, when it was believed that the equipment was subject to NSPS 40 CFR Part 60, Subpart OOO, and that the facility had failed to send notifications of the dates of construction and of start-up. This subsequent NOV/NRE was rescinded on June 25, 2010, when it was discovered that the equipment was not in fact subject to Subpart OOO due to limited throughput. The modification application was received on June 10, 2010 for the April NOV/NRE. Once received, it was discovered that several more equipment additions had been made to the facility that were not discovered in April. Therefore, the facility was issued another NOV/NRE on July 20, 2010, for the additional equipment. Enforcement was pursued in case DAQ 2010-114, and $3,245.00 was paid in full on October 26, 2010. The modified permit was issued on July 21, 2010.

9. APPLICATION FEE

There is a fee of $400.00 for a modification application for a facility classified as Synthetic Minor. With this modification, the facility's classification did change from Small to Synthetic Minor. Therefore, the payment amount was appropriate. The check was received and accepted on June 12, 2015.

10. ZONING CONSISTENCY DETERMINATION (ZCD)

A zoning consistency determination (ZCD) is required for a modification application. A ZCD from the Watauga County Planning and Inspections Department was received with the application on June 12, 2015. As discussed in the first section of this review, the facility was required to comply with 2Q .0113 "Notification in Areas without Zoning." The facility was accepted as being in compliance with this rule on June 30, 2015, after an adjustment to the posted sign was made.

11. RECOMMENDATION

It is recommended that permit 10003/R05 be issued to Maymead Materials, Inc. - 421 Recycling Yard.

12. SUMMARY OF ATTACHMENTS

A – Bagfilter Evaluation spreadsheet
B – Asphalt Emissions Calculator Revision F 07/18/2012 spreadsheet
C – Fuel Oil Combustion Emissions Calculator Revision G 11/05/2012 spreadsheet
D – Stone Crushing/Quarry Emissions Calculator Revision C 05/23/2011 spreadsheet – Potential Before Controls/Limits
E – Stone Crushing/Quarry Emissions Calculator Revision C 05/23/2011 spreadsheet – Potential After Controls/Limits
F – Email Correspondence